

# Infections in Health and Disease

The development of highly effective anti-microbial interventions, in particular vaccination, has been one of the greatest successes of modern medicine. This development enabled us to cope with diseases that were once life-threatening and debilitating. Interestingly, some microorganisms can manipulate the human immune system in a manner that may be beneficial for the host. Humans coexist with a complex set of commensal microorganisms in a symbiotic relationship. How this plays a key role in health and disease, is only now becoming clear.

## Introduction

It would be no exaggeration to say that infections have shaped human history. Large swathes of humanity have been culled in various epidemics and pandemics, which have shadowed us through the years and that this can happen again in the future is not so much a case of 'if' but of 'when'. In response to infectious diseases our bodies have evolved mechanisms to eliminate, limit and, even, tolerate different infections and the diseases they cause. Much laboratory and clinical research is focussed on characterizing this interplay



between the human host and pathogen, to determine what (host and pathogen) factors correlate with disease and what is required to remove the infection and/or the disease symptoms.

## Quote

**“The academics in this minor were taught effectively, I have hugely improved my research skills!”**

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## Overview

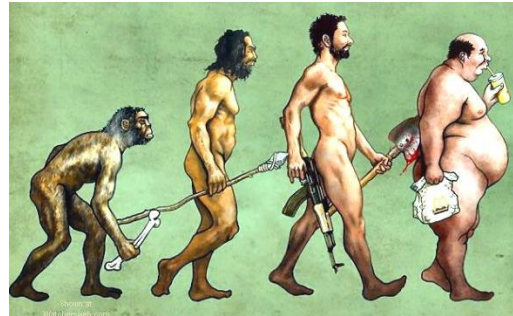
This half minor consists of five themes: introduction to immune-mediated diseases, host-pathogen interaction, modulation by commensals, vaccines, and innovative therapies. Using these themes, the course aims to examine fundamental health care questions related to infectious diseases (viral, bacterial and parasitic) as

they pertain to medical microbiology, pathology and clinical research. The course will also reflect on some of the ethical concerns, related to vaccines and vaccination research, but with implications across many medical disciplines.

**Immune-mediated diseases, host-pathogen interaction, *modulation by commensals, vaccines*, innovative therapies!**

## Learning goals

At the end of this half minor, the student has profound knowledge of the immune system, infectious diseases, and their diagnostic methods. The student can also develop therapeutic plans and immune interventions. Lastly, this minor teaches academic skills such as critical evaluation of current research, and how to design new studies to fill the gaps of knowledge in this field of expertise.



### Past Epidemics

- **Measles, smallpox, plague**

### Current Epidemics

- **Malaria, HIV, TB, Ebola, Zika virus**

### Emerging Diseases

- **Inflammatory, metabolic,**

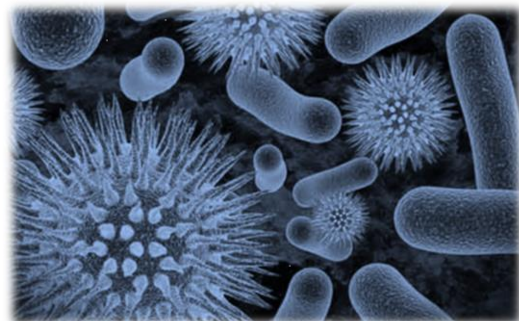
### Immunocompromised

- **genetic defect, transplantation, cancer**

### Multi Drug Resistance

## Assessment

- Written exam (2x) (20% of final grade)
- Written laboratory report (20% of final grade)
- Blog (20% of final grade)
- Research proposal presentation (40% of final grade)



## Contact us



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